No. 713,700. Patented Nov. 18, 1902.

H. SHOEMAKER.

WIRELESS TELEGRAPHY.

(Application filed June 10, 1901.)

(No Model.)

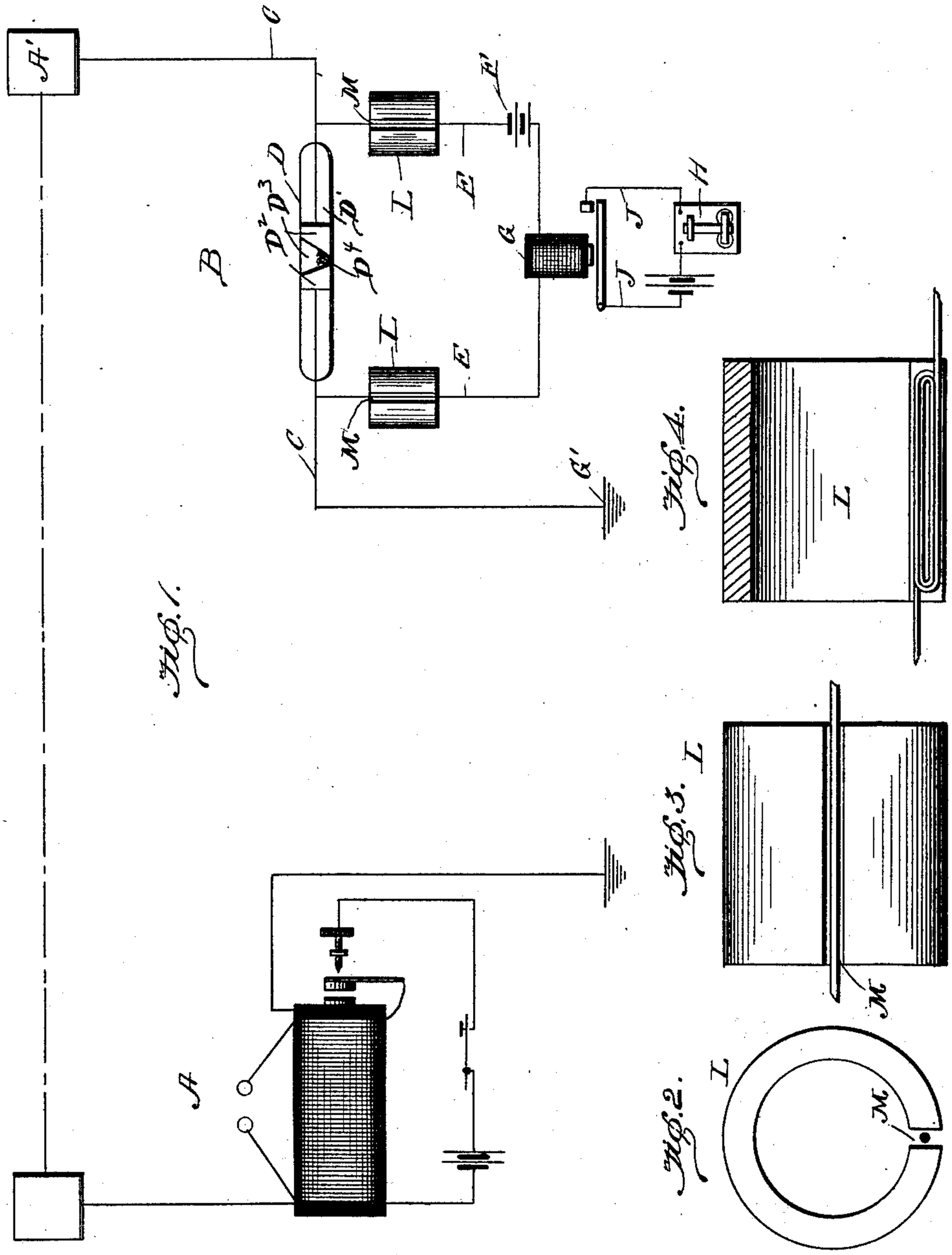

Fig. 1.

Fig. 4.

Fig. 3.

Fig. 2.

Witnesses
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WIRELESS TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 713,700, dated November 18, 1902.

Application filed June 10, 1901. Serial No. 63,886. (No model.)

To all whom it may concern:

Be it known that I, HARRY SHOEMAKER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Wireless Telegraphy, of which the following is a specification.

This invention relates to improvements in wireless telegraphy; and the main object of the invention is the provision of a system whose main circuit is provided with a choking apparatus for Hertzian waves, said apparatus influencing said circuit without being directly connected therein or thereto.

Another object of my invention is the provision of a novel form of choking apparatus embodying new features in its construction.

With these objects in view my invention consists of a system of wireless telegraphy embodying novel features of construction and arrangement of parts, substantially as disclosed herein.

In the drawings, Figure 1 is a diagrammatical view of an entire system embodying my invention. Fig. 2 is an end view of one of the magnets. Fig. 3 is a side elevation thereof, and Fig. 4 is a section taken through the air-gap and the opposite side of the magnet.

Referring to the drawings, A designates a transmitting-station, and B the receiving-station. The receiving-station consists of the air and ground plates A′ and G′, the wires C connecting them with the coherer D. The coherer consists of the tube D′, having the plugs D^2, providing the pocket D^3 to receive the magnetic particles or powder D^4, the wires C being connected to said plugs. Connected to these wires also is the main relay-circuit E, having the batteries F, and the relay G, which operates the sounder H through its circuit J.

In wireless-telegraph receiving systems it is necessary to employ choking-coils in the local circuit to prevent the high-frequency oscillations induced in the aerial wire from passing through the local circuit and thence to the ground without going through the coherer. These choking-coils have heretofore been coils of high self-inductance wound on soft-iron cores. In this form of choking-coil the choking effect is wholly due to the field set up by electrical oscillations. In my improved choking device, however, I use a permanent magnet L, which may have various forms, but which I preferably make of a tubular or cylindrical steel shell, having an air-gap M extending the full length thereof. This air-gap is quite narrow, and so has an intense magnetic field. Through this air-gap passes the wires of the main relay-circuit, as shown in Fig. 1. Two of these magnets are employed.

In Fig. 4 is shown the preferred form, consisting of a coil placed within the air-gap; but I have found that it is possible to simply use a section of straight wire, as shown in Fig. 3, for producing an effective choking means.

I have found by experiment that by using a permanent magnet, as shown, I can produce a much greater impedance to the high-frequency oscillations with the same length of wire and same number of turns than if the wire were wound upon a soft-iron core. This would be obvious, because there is always a magnetic field which is independent of the current flowing in the wire because of the permanent magnet. By the reaction of this permanent field on the field produced by the high-frequency oscilliations the choking effect is produced. By means of this arrangement I am enabled to lessen the resistance of the local relay-circuit, because, as explained above, a much less amount of wire may be used for the coils than if a soft-iron core were employed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a receiver for electrical oscillations, the combination of an imperfect electrical contact, a main relay-circuit therewith, and permanent magnets provided each with an air-gap of an intense magnetic field, through which said relay-circuit passes.

2. In a receiver for electrical oscillations, the combination of an imperfect electrical contact, a main relay-circuit connected therewith, a pair of permanent magnets provided each with an air-gap of an intense magnetic field through which said relay-circuit passes, and a receiving-instrument circuit operated by the relay-circuit.

3. In a receiver for electrical oscillations, the combination of a tube, metallic plugs in the tube, metallic powder between the plugs, metallic plates connected to the plugs, a main relay-circuit connected to the plugs and powder, and a pair of permanent magnets provided each with an air-gap of an intense magnetic field through which said relay-circuit passes.

4. In a receiver for electrical oscillations, the combination with a wave-responsive device, of a permanent magnet having a longitudinal air-gap, and a local relay-circuit in shunt to said wave-responsive device, a portion of this relay-circuit passing through said longitudinal air-gap.

5. As a choking device for electrical oscillations, the combination of a local relay-circuit and a permanent magnet having a longitudinal air-gap of an intense magnetic field inclosing a portion of said local relay-circuit.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY SHOEMAKER.

Witnesses:
WM. J. MOSS,
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